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ABSTRACT

Environmental robustness is a highly dramatic, tension-producing climate characterizing the school organization; for example, strict discipline in a traditional school. To validate this theoretical construct with teachers, 264 elementary and secondary school teachers completed the Semantic Differential Robustness Scale and the School Survey. The Robustness Scale consists of polar adjective pairs known to discriminate between the concepts dramatic and not dramatic; teachers used the scale to rate the robustness roles of themselves, their principals, and their students. The School Survey measures teacher attitudes toward school environment along 14 dimensions. It was hypothesized that significant multiple correlations would be established between the robustness roles and dimensions of the School Survey; specifically: (1) teacher role nd attitudes towards opportunities for professional performance and development; (2) principal role and attitudes towards supervisory relations; (3) student role and attitudes toward educational effectiveness. All three hypothesis were confirmed, using three stepwise multiple regression analysis. General findings lend support to the robustness construct; specific results provide insight into teacher attitude referents of this construct for the roles of teachers administrators, and students. (CP)

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The Relationship Between Teacher Perceptions of the Robustness of Differential Organizational Roles and Dimensions of Their Working Environment: A Regression Analysis

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INTRODUCTION

Recently it has been posited that school organizations may differ in, and can be described in terms of environmental "robustness" (Willower & Licata, 1975). Environmental robustness, or high dramatic content structure in the school organization, probably serves a tension-producing or arousal function. Robust structures, as in memorable theatrical performances, provide the school population with a focus for empathic involvement (Licata, Willower, & Ellett, 1978).

Waller (1932), Eddy (1967), and Cusick (1973) have effectively described the drama inherent in school life. The empathy and apathy of school life and events within the school context that produce these affective "tones" combine to depict school as a potentially "robust" place for both students and professional staff alike. Strict discipline in the more traditional school, for example, might be considered an organizational structure with high dramatic content for students. The punishment of a student for misbehavior is inherently tension-producing since the student audience finds it relatively easy to empathize with the individual being punished (Willower & Licata, 1975). This kind of role-taking has been described by Kounin and Gump (1958) as the "ripple effect" of school discipline, a phenomenon noted long ago by Durkheim (1947) who suggested that the punishment of a crime has more important societal impact on the innocent than on the criminal. Similarly, the "big game," moments of poignancy, student "brinkmanship" (Licata & Willower, 1975), and graduation exercises are examples of highly robust school structures.

Willower and Licata (1975) invoked the theoretical construct of environmental "robustness" in explaining observed differences between student percep-

tions of the frequency of brinkmanship behavior and teachers' pupil control ideology in "open" and "closed" schools. According to the authors, the possibility exists that more open school organizations, in an attempt to develop tension-reducing school structures, produce sterile environments deficient in dramatic content for students, and are less robust than more traditional (closed) schools.

Much of the initial speculation about the nature of the environmental robustness construct has been speculative due to a lack of empirical evidence and the absence of robustness measures. A recent study by Licata, Willower, & Ellett (1978) describes the development of a semantic differential robustness measure derived from factor analytic techniques. Results of the factor analysis of 120 elementary students' semantic differential responses to the concept My School produced a unidimensional measure of robustness consisting of adjective pairs discriminating between dramatic and not dramatic. This robustness measure was regressed on students' perceptions of characteristics of the school climate/learning environment and their perceptions of principals' behaviors. Four propositions about the nature of school robustness and these student perceptions were established and served to further operationalize the robustness construct:

1. A robust secondary school organization tends to be one in which the objectives and goals of school classes are clearly articulated, in which there are friendly relationships between students, in which a minimum of competition between students exists, and in which student interests and activities are diverse.

2. A robust secondary school organization tends to be one in which there is a minimum of student tension over favoritism, disorganization and apathy, and in which there are positive student feelings about the diversity and nature of student interests, work, and friendships.

3. A robust secondary school organization is one in which the principal frequently attends school activities, and frequently helps teachers supervise students at such activities.

4. A robust <u>elementary</u> school organization is one in which the principal effectively attends school activities and in which the principal effectively talks with students about their misbehavior.

Willower, Licata, & Ellett (1978) concluded that their results lent support to initial speculations about the nature of robustness as a theoretical construct, and demonstrated that simple robustness measures are related to a variety of student school environment perceptions. While exploratory investigations have been completed with students, no studies have been undertaken attempting to relate teacher perceptions of dimensions of their working (school) environment to the perceived robustness of components of the school organization. The present study was an attempt to replicate the Licata, Willower, & Ellett (1978) study with a sample of elementary and secondary teachers.

PURPOSE

The purpose of this investigation was to examine relationships between a semantic differential measure of school robustness applied to three school-related concepts and a multiple dimension measure of teacher attitudes towards dimensions of their working environment. On the basis of past research with the instruments used, it was hypothesized that the robustness measure applied to the three concepts, when used as a criterion variable in subsequent regression analyses, would demonstrate concurrent validity with selected scales of the teacher attitude measure. It was hypothesized that significant multiple correlations would be established between the following variable sets: 1) the robustness of the concept IN THIS SCHOOL MY ROLE AS A TEACHER IS and attitudes towards opportunities for professional Performance and Development, 2) the robustness of the concept MY PRINCIPAL IS and attitudes toward Supervisory Relations in the school, and 3) the robustness of the concept MY STUDENTS ARE and attitudes toward the Educational Effectiveness of the school and its programs. It was further hypothesized that all relationships would be positive in direction.

METHODS AND PROCEDURES

Sample

The sample for the study consisted of 264 elementary and secondary teachers from 13 elementary and 5 secondary schools in a rural school system in Southeast Georgia. Secondary teachers represented approximately 51% of the total sample, and elementary teachers represented approximately 49% of the total sample.

Instrumentation

All teachers were administered the Semantic Differential Robustness Scale (SDRS) developed by Licata (1975) and the School Survey developed by Coughlan and Cooke (1974). The SDRS consists of ten polar adjective pairs identified through factor analytic techniques that are known to discriminate between the concepts DRAMATIC and NOT DRAMATIC for both teacher and student samples. Respondents are asked to use the polar adjective pairs in making judgments about concepts relevant to the school context using the same general procedures originally outlined by Osgood (1957). Teachers in this study used the SDRS in responding to three concepts: 1) IN THIS SCHOOL MY ROLE AS A TEACHER IS, 2) MY PRINCIPAL IS, and 3) MY STUDENTS ARE. A copy of the SDRS polar adjective pairs can be found in Appendix A.

The School Survey (SS) is a 118-item inventory designed to measure teacher attitudes toward a variety of dimensions of their working (school) environment. The SS yields scores for 14 different subscales. A complete listing of the SS subscales, the number of items on each, and sample statements can be found in Appendix A. The response format of the SS allows teachers to make judgments as to whether they agree, are neutral or have no opinion, or disagree with each of the 118 items.

Data Collection Procedures

Both the SDRS and the SS were administered to teachers on a take-home basis in the Spring of 1977, allowing from 3 to 5 days for completion. Teachers remained anonymous except in terms of school code. Instruments for each teacher were easily matched since they were administered and returned in one package for keypunching.

Instrument Scoring Procedures

Scores for the SDRS for each of the three concepts were computed by summing responses across all ten polar adjective pairs. Individual adjective pair responses were scored from 1 to 7, with seven indicating high robustness and one indicating low robustness. Possible total scores for the ten adjective pairs ranged from a low of 10 (low robustness) to a high of 70 (high robustness) for each teacher.

Scores for the SS were computed by summing individual item ratings for each item comprising a given SS subscale. Possible item scores ranged from 1 (negative attitude) to 3 (positive attitude). Neutral or no opinion ratings were scored as a two. The range from low to high (negative to positive) scores for individual SS subscales varied owing to the different number of items comprising each subscale.

Statistical Analyses

Three separate multiple regression analyses were computed according to procedures outlined by Kim and Kohout (1975), using forward, stepwise inclusion procedures and individual teacher responses as the units of analysis. With such procedures, the independent variable that explains the greatest amount of criterion variance is entered into the regression equation first, and variables that explain the greatest amount of criterion variance in conjunction with those

already in the equation (highest partial correlation) enter at each successive step. No hierarchial inclusion criteria were established for the entry of any of the independent variables. For each of the three analyses, the SDRS scores for a concept were regressed on subscale scores of the SS. The SS subscales were conceptualized as an independent variable set, and the SDRS scores as criterion variables.

RESULTS

Table 1 presents a summary of simple correlations (r), multiple correlations (R), squared multiple correlations (R^2), F values (F), and significance levels (p) for each step of the regression of the SDRS applied to the concept MY ROLE AS A TEACHER IS on factors of the SS instrument. Results in the table indicate that teachers' attitudes toward opportunities for professional Performance and Development significantly correlated with the SDRS at step one in the analysis (r=.547), and accounted for approximately 30% of SDRS variance. At step two, the next variable to enter the regression equation was the measure of teacher attitudes toward school Educational Effectiveness, which when combined with the Performance and Development variable, served to increase the multiple correlation to .559, and the amount of SS/SDRS shared variance to approximately 31%. The third variable to enter the equation at step 3 was Non-Professional Work Load. The simple correlation between this teacher attitude dimension and the SDRS was .323. The addition of this variable to the regression equation did not account for a statistically significant amount of SDRS variance above that accounted for by the first two teacher attitude factors. The results in Table 1 indicate that teachers' positive attitudes toward opportunities for professional performance and development provided by the school system in combination with the educational effectiveness of the school and its programs are moderately related to the perceived robustness of their role as teachers.

It is interesting to note that all of the SDRS/SS subscale simple correlations were positive and statistically significant at the .01 level, and ranged from a low of .23 (SDRS/Financial Incentives) to a high of .55 (SDRS/Performance and Development). The inclusion of all 14 of the SS subscales in the regression equation for this analysis served to increase the multiple correlation to only .587, and the amount of explained SDRS/SS variance to approximately 34%. This finding suggests that the SS subscales of Performance and Development and Educational Effectiveness account for the majority of explained SDRS/SS common variance.

Table 2 presents a summary of findings from the regression of the SDRS applied to the concept MY PRINCIPAL IS and subscales of the SS instrument. The first SS variable to enter the regression equation was the measure of teachers' attitudes towards Supervisory Relations provided by the principal. The simple SDRS/Supervisory Relations correlation was positive and moderately high in magnitude ($r=.702$; $p<.001$). The next SS variable to enter at step two was a measure of teachers' attitudes toward opportunities for professional Performance and Development. When combined with the attitude factor at step one, the multiple correlation increased to .727, indicating approximately 53% shared SDRS/SS factor variance. Though not of great practical importance, successive amounts of SDRS variance were accounted for through step five by the addition of Educational Effectiveness, Colleague Relations, and Evaluation of Students, increasing the multiple correlation to .746, and the amount of common SDRS/SS variance to approximately 56%. The results in Table 2 indicate that teachers' perception of the principal as a robust figure in the school context is largely explained by their positive attitudes toward the quality of supervision he/she provides at the building level.

An examination of the SDRS/SS factor simple correlations indicated that they were all statistically significant at the .01 level (one-tailed test), and positive in direction. The magnitude of the simple correlations ranged from a low

of .21 (SDRS/Financial Incentives) to a high of .70 (SDRS/Supervisory Relations). The inclusion of all 14 SS factors in the equation served to increase the multiple correlation to only .754, and the amount of SDRS/SS shared variance to approximately 57%.

Table 3 summarizes the results of the regression of the SDRS applied to the concept MY STUDENTS ARE and subscales of the SS instrument. The SS subscale entering the regression equation at the first step was a measure of teachers' attitudes toward the Educational Effectiveness of the school and its programs. The simple SDRS/Educational Effectiveness correlation was .428 ($p<.001$), indicating approximately 18% of common SDRS/SS variance. The addition of teachers' positive attitudes toward Voice in Educational Program to the equation at step two raised the multiple correlation to .460, and the amount of SDRS/SS common variance to approximately 21%. The addition of the 12 remaining SS factors to the equation served to increase the SDRS/SS multiple correlation to only .493, and the amount of shared variance to 24%.

An examination of SDRS/SS subscale simple correlations for the third regression analysis indicated that all were moderately positive, ranging from a low of .21 (SDRS/Financial Incentives) to a high of .43 (SDRS/Educational Effectiveness). The results in Table 3 indicate that teachers' attitudes toward school educational effectiveness and voice in determining the educational program are positively, though moderately related to the perceived robustness of their students.

DISCUSSION AND CONCLUSIONS

The process of regressing the SDRS applied to three concepts related to the school context (Organizational Roles) on a multiple dimension measure of teacher work satisfaction or "morale," yielded some interesting findings having relevance

for a greater operationalizing of the "robustness" construct. Past research findings (Licata, Willower, & Ellett, 1978) demonstrate significant multiple correlations between student perceptions of the robustness of the concept MY SCHOOL using the SDRS, and student perceptions of characteristics of the school climate/learning environment and ratings of principals' performances. Results of this study indicate the differential relations between teachers' attitudes towards dimensions of their working (school) environment and the perceived robustness of three additional school-related concepts (Organizational Roles).

In the present study results of the first regression analysis indicated that the perceived robustness of the teacher's role in the school organization is accounted for by teachers' positive attitudes toward being given a voice in determining the educational program of the school, and their positive attitudes toward the school's general educational effectiveness. This finding supported the first hypothesis of the study, and served to generate the following proposition about the nature of school robustness:

> Proposition ONE: The robust teacher role in the school organization is one in which teachers have positive attitudes toward opportunities provided for determining the content and nature of the school's educational program, and the general educational effectiveness of the school.

Results of the second regression analysis of the SDRS/MY PRINCIPAL IS on the SS subscales supported the second hypothesis of the study. Results of this analysis indicated that the perceived robustness of the school principal from the teacher's viewpoint, is largely explained by teachers' attitudes toward the quality of supervision the principal provides. Findings from the second regression analysis lead to the formulation of a second proposition about the nature of the school robustness construct:

Proposition TWO: The robust school principal exists in a school organization in which teachers have positive attitudes toward the quality of building level supervision, the opportunities provided for having input into the educational program, the general educational effectiveness of the school and community, the quality of colleague relations, and the school's programs and procedures for evaluating students.

Results of the third regression analysis of the SDRS/MY STUDENTS ARE on the SS instrument supported the third hypothesis of the study. Results of this analysis indicated that teachers' perceptions of students as robust figures in the school organization go hand-in-hand with teachers' positive attitudes toward the general educational effectiveness of the school. Findings from the third regressior analysis generated a third researchable proposition:

Proposition THREE: Robust students exist in schools in which teachers have positive attitudes toward the educational effectiveness of the school and its programs and positive attitudes toward determining the same.

In addition to further operationalizing and generating propositions about the nature of the school "robustness" construct, the results reported here can be regarded as evidence of the incremental and/or criterion-related validity of the SS subscales. Past research with the SS instrument has shown relations between its subscales and measures of student perceptions of the school climate/learning environment to be relatively independent (Ellett, Payne, Masters, & Pool, 1977). In addition, the SS subscales in the original and an eight-factor form have been demonstrated to be significantly related to student outcomes such as achievement and attendance, when school size and SES characteristics are statistically controlled (Ellett & Masters, 1977). Data reported in this study suggest that positive teacher attitudes as measured by the SS instrument, differentially (but logically) relate to teachers' perceptions of the robustness of three key roles in the school organization.

In considering the three analyses reported here in conjunction with the re-

sults of the investigations cited above, the most frequently occurring teacher attitude factor demonstrating criterion-related validity on the SS instrument is the Educational Effectiveness dimension. This teacher attitude composite has also been demonstrated to be highly and positively related to the frequency and effectiveness with which teachers perceive their principal as carrying out a wide variety of school-related performances (Pool & Ellett, 1977). This latter finding is of interest in the present study since the SDRS applied to the concept MY PRINCIPAL IS correlated positively and significantly ($r=.70$; $p<.001$) with the SS subscale of Supervisory Relations. The SS Educational Effectiveness scale, on the other hand, correlated .51 with the SDRS applied to the concept MY PRINCIPAL IS, and entered into the regression equation at the third step. These findings, when considered together, suggest that teachers' positive feelings about a school's educational effectiveness go hand-in-hand with their perceptions of the frequency and effectiveness with which their principal performs a wide variety of tasks in the school context. But, at the same time, the "robust" principal is one who primarily provides high quality supervision.

General findings of this study lend support to the initial speculation and research on the construct of school robustness, and replicate past studies demonstrating that simple robustness measures relate to high inference judgments of a variety of school environment characteristics. Specific results of the study provided greater insights into teacher attitude referents of the robustness construct for three key roles in the school organization. The robustness construct seems a viable one for educational research concerned with the investigation of school environment and organizational structures. While "causal" paths relating teacher and student school environment perceptions to school organizational characteristics and important school outcomes are not

easily structured, demonstrating such linkages in future research might be of considerable theoretical interest. The simple robustness measure used in the present study might be considerably improved by establishing low-inference referents for the robustness construct. One might, for example, separate classes, students, or schools using SDRS scores into high and low robust groups, and use existing behavioral observation measures to assess characteristics of these educational environments. This approach could provide low-inference data for further operationalizing the robustness construct, and for demonstrating the "discriminant" validity of the SDRS instrument. Such approaches to measuring and examining the nature of these data might provide the basis for using the robustness construct to integrate and explain the wide variety of research findings on school environment and organizational differences.

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TABLE 1

Summary of Stepwise Multiple Regression Analysis of the SDRS
Applied to the Concept "My Role as a Teacher Is"
and Factors of the School Survey
(n=264 elementary and secondary teachers)

Regression Step	r	R	R^2	F	p
1. Performance and Development	.547	.547	.299	112.56	.001
2. Educational Effectiveness	.423	.559	.313	4.91	.05
3. Non-Professional Work Load	.323	.565	.319	2.55	*

*F value for variable in equation not significant at .05 level

TABLE 2

Summary of Stepwise Multiple Regression Analysis of the SDRS
Applied to the Concept "My Principal Is"
and Factors of the School Survey
(n=264 elementary and secondary teachers)

Regression Step	r	R	R^2	F	p
1. Supervisory Relations	.702	.702	.492	254.96	.001
2. Performance and Development	.652	.727	.528	19.91	.001
3. Educational Effectiveness	.509	.734	.539	6.29	.01
4. Colleague Relations	.402	.743	.552	7.22	.01
5. Evaluation of Students	.553	.746	.556	2.99	.05
6. Professional Work Load	.348	.748	.560	2.12	*

*F value for variable in equation not significant at .05 level

TABLE 3

Summary of Stepwise Multiple Regression Analysis of the SDRS
Applied to the Concept "My Students Are"
and Factors of the School Survey
(n=264 elementary and secondary teachers)

Regression Step	r	R	R^2	F	p
1. Educational Effectiveness	.428	.428	.183	59.08	.001
2. Voice in Educational Program	.366	.460	.212	9.59	.001
3. Special Services	.259	.468	.219	3.32	*

*F value for variable in equation not significant at the .05 level

APPENDIX A

(Concept Here)

Challenging	Very	Quite	Slightly	Undecided	Slightly	Quite	Very Dull
Unimportant							Important
Interesting							Boring
Meaningless							Meaningful
Fresh							Stale
Unusual							Usual
Thrilling							Quieting
Passive							Active
Powerful							Weak
Uneventful							Action-Packed

Subscales and Sample Items of the School Survey
Administered to Elementary and Secondary Teachers

Scales	Sample Item
1. Administrative Practices (9)[1]	"The administration seems willing to give careful consideration to our ideas and suggestions."
2. Professional Work Load (9)	"I am asked to spend too much time in meetings around here."
3. Non-Professional Work Load (6)	"I receive sufficient clerical assistance to do my job effectively."
4. Materials and Equipment (8)	"The instructional materials provided for me here are very satisfactory."
5. Buildings and Facilities (7)	"The layout of this school is inconvenient for the staff."
6. Educational Effectiveness (10)	"In my opinion, adequate educational standards are being upheld in this school."
7. Evaluation of Students (10)	"Students' absences are excessive in this school."
8. Special Services (8)	"Our library services for students are very satisfactory."
9. School-Community Relations (7)	"In general, I approve of school board policies."
10. Supervisory Relations (10)	"I seldom get the help I need in handling difficult discipline cases."
11. Colleague Relations (7)	"People in my school cooperate well."
12. Voice in Educational Program (8)	"I should have a greater voice in selecting students' textbooks and reference material."
13. Performance and Development (10)	"I think my work performance is judged fairly here."
14. Financial Incentives (9)	"I feel our salary system adequately rewards outstanding work."

[1]Number of items in subscale